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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/650,046	08/28/2003	Toru Takayama	0756-7193	7230

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EXAMINER	
NGUYEN, THANH T	

ART UNIT	PAPER NUMBER
2813	

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/650,046	TAKAYAMA ET AL.	
	Examiner	Art Unit	
	Thanh T. Nguyen	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *20 April 2005*.

2a)☒ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-80* is/are pending in the application.

4a) Of the above claim(s) *2,7,12,17,22,27,32 and 58-73* is/are withdrawn from consideration.

5)☒ Claim(s) *36-57* is/are allowed.

6)☒ Claim(s) *3-5,8,13,18,23,28,33 and 74-80* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/19/05; 12/14/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 2-6, 8, 13, 18, 23, 28, 33, 36-57, 74-80 have been considered but are moot in view of the new ground(s) of rejection.

This application contains claims 2, 7, 12, 17, 22, 27, 32, 58-73 drawn to an invention nonelected in Paper No. 4/20/05. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Information Disclosure Statement

The information disclosure statements filed on 12/14/05, 10/19/05 have been considered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 3-5, 8, 33, 74, 76, 80 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamazaki et al. (U.S. Patent Publication No. 2001/0049163A1).

Referring to figures 12a-20, Yamazaki et al. teaches a manufacturing method for a semiconductor device comprising:

Forming at least first and second semiconductor layers (32/33/34/35) that are divided from each other in an island-like shape over a substrate surface having an insulating surface (31, see figures 15a-15d);

Forming a conductive layer (3003/3004, armophous silicon) covering an entire surface of each of the first and second semiconductor layers (32/33/34/35) with an insulating layer (3001/36/37) interposed the between (see figure 15a); and

Selectively heating the first and second semiconductor layer by irradiating an incoherent electromagnetic wave within a wavelength band ranging at least from a visible light band to an infrared band to thereby conducting heat treatment on the first and second semiconductor layers and the insulating layer, wherein the conductive layer extends beyond each periphery of the first and second semiconductor layers at least when the selected heating of the first and second semiconductor layers is performed (see paragraphs# 254, 294). It is inherent that heating the conductive layer, the semiconductor layers and the insulating layer will also heated.

Regarding to claim 4, etching the conductive layer after the selective heating the first and second semiconductor layers to form at least first and second gate electrodes over the first and second semiconductor islands, respectively (see figures 2a, 16).

Regarding to claim 5, the incoherent electromagnetic wave is irradiated for 30-300 seconds (see paragraph# 254)

Regarding to claims 8, 76 substrate is a glass substrate (see paragraph# 118).

Regarding to claims 33, 80, the heat treatment is performed at a temperature not less than a distortion point of the substrate (see paragraph# 254, 294, heating at the temperature 700-1000°C which is greater than 700°C (at the distortion point)).

Regarding to claim 74, a manufacturing method for a semiconductor device comprising:

Forming a semiconductor layer (32/33/34/35) over a substrate (30);

Forming an insulating layer (36/37) over the semiconductor layer;

Forming a conductive layer (3003/3304) over the semiconductor layer with the insuating layer (36/37) interposed there between;

Selectively heating the semiconductor layer by using a heat source capable of radiating an incoherent electromagnetic wave within a wavelength band ranging at least a visible light band to an infrared band wherein the conductive layer extends beyond a periphery of the semiconductor layer at least when the selective heating of the semiconductor layer is performed (see paragraphs# 254, 294). It is inherent that heating the conductive layer, the semiconductor layers and the insulating layer will also heated.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 13, 18, 23, 28, 75, 77-79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. (U.S. Patent Publication No. 2001/0049163A1) as applied to claims 3-5, 8, 33, 74, 76, 80 above in view of Yamazaki et al. (U.S. Patent Publication No. 2002/0000551).

Yamazaki et al. teaches a method of forming a semiconductor device by using a glass substrate. However, Yamazaki does not teach the substrate is selected from one of quartz and sapphire, and the substrate has a transmittance of 50 % or higher with respect to the electromagnetic wave within the wavelength band, forming a first conducting film comprising metal nitride and forming a second conducting film over the first conducting film as a part of the gate electrode.

Regarding to claims 13, 77, the substrate is selected from one of quartz and sapphire (see paragraph# 237).

Regarding to claims 23, 78, the conductive film comprises metal nitride (see paragraph# 245).

Regarding to claims 28, 79, forming a second conductive film on the conductive layer for forming at least part of gate electrode (see paragraph 242+).

Therefore, it would have been obvious to a person of ordinary skill in the requisite art at the time of the invention was made to form a quartz substrate in process of Dairiki et al. as taught by Yamazaki et al. in order for light transparent or to form an insulating substrate, forming the conductive film on the gate insulating film in order to form gate electrode for tft device.

Regarding to claims 18, 75, it would have been obvious to a person of ordinary skill in the requisite art at the time of the invention was made to optimize the a transmittance of 50 % or higher with respect to the electromagnetic wave within the wavelength band, since it has been held that where the general conditions of a claim are disclosed in the prior art (i.e.- a transmittance of 50 % or higher with respect to the electromagnetic wave within the wavelength band), discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233 (CCPA 1955).

The specification contains no disclosure of either the critical nature of the claimed arrangement (i.e.- a transmittance of 50 % or higher with respect to the electromagnetic wave within the wavelength band) or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen limitations or upon another variable recited in a claim, the applicant must show that the chosen limitations are critical. In re Woodruff, 919 F.2d 1575, 1578 (FED. Cir. 1990).

Therefore, it would have been obvious to a person of ordinary skill in the requisite art at the time of the invention was made to form the substrate has a transmittance of 50 % or higher with respect to the electromagnetic wave within the wavelength band in process of Dairiki et al. in order to optimize the process.

Allowable Subject Matter

Claims 36-57 are allowed. Because none of the prior art alone or in combination teaches a heating the substrate by radiation heating from a first heat source and form the layers on the substrate, then heating the layer by using a second heat source for radiating the incoherent electromagnetic wave.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Nguyen whose telephone number is (571) 272-1695, or by Email via address Thanh.Nguyen@uspto.gov. The examiner can normally be reached on Monday-Thursday from 6:00AM to 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, can be reached on (571) 272-1702. The fax phone number for this Group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956 (**See MPEP 203.08**).

Thanh Nguyen
Patent Examiner
Patent Examining Group 2800

TTN